

Notes on *Sarcophaga Fuscicauda* Böttcher (Diptera).

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(Presented at the meeting of April 2, 1925.)

This subtropical species has been known in Hawaii for about twenty years, until recently going under the label "*Sarcophaga* sp." When I went to North Queensland in 1917 I again found it. In the warm humid districts along the coast of that state it is a particularly troublesome species, for it apparently is as closely associated with man there as even the house-fly itself.

Though it is an omnivorous feeder, breeding in almost any form of organic matter, it evidently favors human excrement. While located in the Cairns district, I bred out thousands of maggots from outdoor toilets, and found practically all of them belonged to this species. It was also a distressing pest about the insectary, frequently getting its maggots into the jars of parasitized beetles, and thus upsetting calculations.

Because of its extreme economic importance, I sent specimens from my Queensland laboratory to Dr. R. R. Parker for determination. November 14, 1918, he wrote that this species was *Sarcophaga fuscicauda* Böttcher. Mr. Timberlake later sent specimens from Honolulu to Doctor Parker for determination. These were referred to the same species. (See Proc. Haw. Ent. Soc., Vol. 4, p. 256, March 6, 1919.)

Doctor Parker wrote me December 11, 1922, referring to a recent paper, which I had sent him, by Johnston and Tiegs on the Sarcophagid flies of Queensland. Regarding the above species, he remarked:

"If Johnston's determination of *Sarcophaga irrequieta* Walker is correct, then *fuscicauda* Böttcher is synonymous."

Thinking that we might be able to clear up the confusion in this, the name of one of our most important economic species, I wrote to Doctor Marshall of the British Museum January 30, 1925, as follows:

"I am wondering if you cannot help us straighten out the name of one of our tropical species of sarcophagids. We have known

this fly for some time in Hawaii, and Mr. Timberlake included it in his "Key to Separate Hawaiian Sarcophaga" (see Proc. Haw. Ent. Soc., Vol. 3, p. 371, typed copy enclosed) as *Sarcophaga* sp. Later, Dr. R. R. Parker determined the species for me as *S. fuscicauda* Böttcher. I found these flies abundant about habitations in North Queensland.

"When Johnston and Tiegs worked the Queensland sarcophagids (see Proc. Roy. Soc. Qsld., Vol. 33, pp. 46-90), they decided that this was Walker's species *S. irrequieta* (1849). We do not have access to Walker's list, but I understand that his type is a female specimen, which is now in the British Museum.

"Since our species is so widely spread in the Pacific, and everywhere so closely associated with man, it is important to get it correctly determined.

"Using Timberlake's key, I believe it will be possible, even though Walker's type is a female, to clear this matter up.

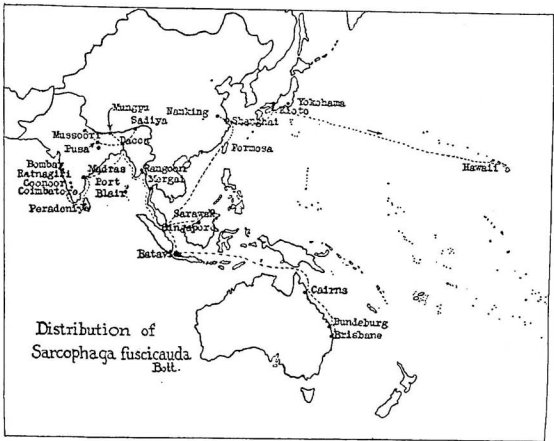
"I will send you some specimens of our species for comparison, also some of the same collected in Australia."

Doctor Marshall in his reply dated 26th of February, 1925, says:

"I have now carefully compared your specimens with Walker's type, and have also submitted them to Major Austen. We agree in thinking that it would be unwise to attribute your insects to Walker's species, although they are evidently extremely closely allied. Walker's specimen is in very bad condition, but there is no trace of any scars representing the intermediate pair of prescutellar bristles, and the front is undoubtedly broader in Walker's specimen than in any of your females. It will be difficult to clear up the exact identity of *S. irrequieta* until we have been able to obtain both males and females from the same locality in western Australia. Major Austen thinks it would be much wiser for you to retain your species under the name of *S. fuscicauda* Böttcher."

A very valuable paper on Oriental sarcophagids by Ronald Senior-White has recently appeared (see Records Indian Mus., Vol. 26, pp. 193-283, with 12 pls., May, 1924). Mr. White considers *S. fuscicauda* as a typical Malayan species. Yet his numerous data would make it appear that it is characteristically

Indian. From my collection in the Orient and Australia, I had come to this conclusion. That it is essentially a subtropical species, I do not think there is any doubt. I found it along the whole coast of Queensland, extending in diminishing numbers as far south as Brisbane. I got none at Sydney, though I did considerable collecting there. In the Orient, too, I found that it did not extend its range far northward. In the southern half



of Japan and in China, as far north as the Yangtze River, it is by far the most abundant sarcophagid around the habitations of man. It there breeds commonly in the open tanks of human excrement. Under these conditions its maggots have acquired a habit of living in the semiliquid fertilizer. It is interesting to recall that I bred it here in 1916 under very similar conditions in liquid hen-manure.

This fly is undoubtedly an important agent in the dissemination of disease, especially those troubles that are carried in human excrement. When I was making extensive collections of the Diptera that frequented the shops where foods were exposed for sale in Yokohama, I got approximately 20 per cent belong-

ing to this species. Hence, in the adult stage, coming straight from the vilest of breeding places they contaminate candies, fruits, etc., which are commonly eaten without cooking. Children being fond of such foods are especially affected.

It is very evident that this species makes good use of the common carriers of commerce. Mr. Bryan has made an outline map to include all the records which I have been able to collect on its distribution. It will be noted that India, or southern Asia, may well be considered as the home of this species, and that in extending its range it has followed the natural routes of shipping. Inland, too, all the known locations even far removed from the coasts, lie along railways, etc. From these data the best possible guess is that these flies came to us on ships from Yokohama.